

PROJECT NUMBER : 2706
PROJECT TITLE : New Expanded Tobacco
PROJECT LEADER : T. M. Howell
PERIOD COVERED : December, 1990

I. EXPANDED TOBACCO

A. **Objective:** Determine if the CV of expanded filler can be improved and/or if post expansion collapse can be reduced by pretreating DIET feed with approved additives.

B. **Results:** Last month it was reported that pretreating DIET filler with calcium hydroxide and bulking for 24 hours increases the CV of the expanded filler by about 1.8 CV units. Experiments this month have confirmed that work. It was further observed that 1%, 3% and 5% addition levels of CaOH gave almost equivalent results. Calcium acetate and a combination of calcium acetate plus KOH were shown to produce CV improvements similar to CaOH in the expanded filler. Pilot plant trials were scheduled and executed to optimize the use of these additives. The results of those tests are pending and will be reported separately.

An increase of about one CV unit for bright filler was achieved with the addition of 5% CaOH and 24 hour bulking at 30% OV. This stiffening improvement was obtained without subjecting the tobacco to the expansion process. In comparison, a 0.6 CV unit gain was made possible by bulking the filler at 30% OV for 24 hours without any additives. Preliminary trials with calcium acetate have shown promise but in all cases the extent of increase is dependent on the amount of additive added, bulking moisture and bulking time.

C. **Conclusions:** Allowing tobacco to stand for an extended period of time at high OV's is not practical under the current tobacco processing scheme. If CV gains can be attained at shorter bulking times, lower OVs and without a change in the tobacco subjective character, then it may be possible to improve the filling power of the total blend.

D. **Plans:** Additional studies are now underway to investigate the effect of alternate additives on each of the blend components and to define the minimum treatments required to yield optimum improvements. Contacts have also been made within the Analytical Division to initiate studies that will lead to an understanding of the mechanisms involved and with Manufacturing Primary to determine at what points during processing application may most easily be implemented.

II. EXPANDED TOBACCO

A. **Objective:** Determine if post expansion collapse can be minimized by staging the heating process during expansion.

B. **Results:** DIET filler impregnated with liquid CO₂ was rapidly heated by passing 6000F air through the filler at a high velocity for about 2 seconds. The heated filler

was then transferred to a second heating zone where 225° was passed through for about 10 to 12 seconds. Immediately after the second stage heating the tobacco was quenched in liquid nitrogen. SVs were measured on the filler before and after equilibration at 60% RH in an environmental chamber. A series of three tests using the above procedure was completed with no improvement shown in SV over the normal DIET expansion process.

- C. **Conclusion:** The above procedure was designed to give a quick indication of the feasibility of staged heating and wasn't well controlled; however, the results do not present any worthwhile evidence for pursuing this expansion scheme further in the laboratory.
- D. **Plans:** No further work is planned on this objective. Continue efforts to decrease the rate of expansion as described last month using the modified bench top expansion unit. Determine the precise temperature at which the impregnated CO₂ is released and expansion occurs.

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